Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) A method for controlling a vehicle using a nonlinear error-based control, the method comprising:

determining a current value of a first vehicle parameter;

determining a first error, the first error being a difference between a first target value of the first vehicle parameter and the current value of the first vehicle parameter;

determining a first vehicle request, the first vehicle request being a nonlinear, increasing function of the first error;

determining at least one additional vehicle request;

performing at least one arbitration on at least two of the vehicle requests prior to the application of an integrator to any of the at least two vehicle requests, thereby determining an arbitrated vehicle request; and

applying a first transfer function including an integrator to the arbitrated vehicle request.

2. (previously presented) The method of claim 1, wherein the step of determining at least one additional vehicle request includes determining a second vehicle request, and the step of performing at least one arbitration includes arbitrating the first and second vehicle requests, thereby determining the arbitrated vehicle request.

3. (previously presented) The method of claim 1, wherein the step of determining at least one additional vehicle request includes determining a second vehicle request, determining a second error, the second error being a difference between a second target value of the first vehicle parameter and the current value of the first vehicle parameter, and determining a third vehicle request, the third vehicle request being a nonlinear function of the second error.

4. (previously presented) The method of claim 3, wherein the step of performing at least one arbitration includes arbitrating the first and second vehicle requests to define a result, and arbitrating the result and the third vehicle request, thereby determining fourth the arbitrated vehicle request.

5. (previously presented) The method of claim 4, further comprising determining a current value of a second vehicle parameter and wherein the step of applying a first transfer function includes determining a third error, the third error being a difference between the arbitrated vehicle request and the current value of the second vehicle parameter, the integrator being applied to the third error.

6. (canceled)

7. (previously presented) The method of claim 5, the vehicle including a speed control system, wherein the first vehicle parameter is a vehicle speed, the first target value of the first vehicle parameter is a set point of the speed control system, the first error is a first speed error, and the first vehicle request is a speed control system desired acceleration.

8. (original) The method of claim 7, wherein the second vehicle request is a driver desired acceleration, and arbitrating the first and second vehicle requests includes determining the larger of the speed control system desired acceleration and the driver desired acceleration.

9. (original) The method of claim 8, wherein the second target value of the first vehicle parameter includes a predetermined vehicle speed limit, and the third vehicle request includes a vehicle speed limit desired acceleration.

10. (previously presented) The method of claim 9, wherein arbitrating the result and the third vehicle request includes determining the lesser of the result and the vehicle speed limit desired acceleration.

11. (previously presented) The method of claim 10, wherein the arbitrated vehicle request includes a first vehicle acceleration request.

12. (original) The method of claim 11, wherein the first transfer function further includes a feedforward action and a proportional action.

13. (original) The method of claim 12, further comprising applying a second transfer function to the driver desired acceleration, the second transfer function being configured to cancel the integration action in the first transfer function when the first vehicle acceleration request is the driver desired acceleration.

14. (currently amended) A method for controlling a vehicle using nonlinear error-based control, the vehicle including a speed control system, the method comprising:

determining a current value indicative of a vehicle speed;

determining a first speed error, the first speed error being a difference between a target speed and the current value of the speed; and

applying a first gain to the first speed error, thereby producing a speed control system desired acceleration, the first gain being ~~a non-decreasing function of the absolute value of the first error~~ defined by the following:

$Kcc = Kp + \beta|v\_cc - v|$, where Kcc is the first gain, Kp is a first constant, β is a second constant, v_cc is the target speed, and v is the determined current speed.

15-17 (canceled)

18. (previously presented) The method of claim 14, wherein the determined current value is a vehicle speed, the method further comprising:

determining a second speed error, the second speed error being a difference between a predetermined vehicle speed limit and the vehicle speed;

applying a second gain to the second speed error, thereby producing a vehicle speed limit desired acceleration, the second gain being a function of the absolute value of the second error;

determining a driver desired acceleration;

determining a first arbitrated desired acceleration, the first arbitrated desired acceleration being the larger of the speed control system desired acceleration and the driver desired acceleration; and

determining a first vehicle acceleration request, the first vehicle acceleration request being the lesser of the vehicle speed limit desired acceleration and the first arbitrated desired acceleration.

19. (original) The method of claim 18, further comprising:

determining a current value of the vehicle acceleration;

determining an acceleration error, the acceleration error being a difference between the first vehicle acceleration request and the vehicle acceleration current value; and

applying a first transfer function to the acceleration error, thereby deriving a second vehicle acceleration request.

20. (original) The method of claim 19, wherein the first transfer function includes a feedforward action, an integration action and a proportional action.

21. (original) The method of claim 20, further comprising applying a second transfer function to the driver desired acceleration, the second transfer function being configured to cancel the integration action in the first transfer function when the first vehicle acceleration request is the driver desired acceleration.

22-28 (canceled)

29. (new) A method for controlling a vehicle using nonlinear error-based control, the vehicle including a speed control system, the method comprising:

determining a current value indicative of a vehicle speed;

determining a first speed error, the first speed error being a difference between a target speed and the current value of the speed; and

applying a first gain to the first speed error, thereby producing a speed control system desired acceleration, the first gain being defined by the following:

Kcc = max (Kp, β|v_cc - v|), where max is the maximum of Kp and |v_cc - v|, Kcc is the first gain, Kp is a first constant, β is a second constant, v_cc is the target speed, and v is the determined current speed.

30. (new) A method for controlling a vehicle using nonlinear error-based control, the vehicle including a speed control system, the method comprising:

determining a current value of a vehicle speed;

determining a first speed error, the first speed error being a difference between a target speed and the current value of the speed; and

applying a first gain to the first speed error, thereby producing a speed control system desired acceleration, the first gain being a non-decreasing function of the absolute value of the first error;

determining a second speed error, the second speed error being a difference between a predetermined vehicle speed limit and the vehicle speed;

applying a second gain to the second speed error, thereby producing a vehicle speed limit desired acceleration, the second gain being a function of the absolute value of the second error;

determining a driver desired acceleration;

determining a first arbitrated desired acceleration, the first arbitrated desired acceleration being the larger of the speed control system desired acceleration and the driver desired acceleration; and

determining a first vehicle acceleration request, the first vehicle acceleration request being the lesser of the vehicle speed limit desired acceleration and the first arbitrated desired acceleration.

31. (new) The method of claim 30, further comprising:

determining a current value of the vehicle acceleration;

determining an acceleration error, the acceleration error being a difference between the first vehicle acceleration request and the vehicle acceleration current value; and

applying a first transfer function to the acceleration error, thereby deriving a second vehicle acceleration request.

32. (new) The method of claim 31, wherein the first transfer function includes a feedforward action, an integration action and a proportional action.

33. (new) The method of claim 32, further comprising applying a second transfer function to the driver desired acceleration, the second transfer function being configured to cancel the integration action in the first transfer function when the first vehicle acceleration request is the driver desired acceleration.

34. (new) A method for controlling a vehicle using nonlinear error-based control, the vehicle including a speed control system, the method comprising:

determining a current value indicative of a vehicle speed;

determining a first speed error, the first speed error being a difference between a target speed and the current value of the speed;

applying a first gain to the first speed error, thereby producing a speed control system desired acceleration, the first gain being defined by one of the following:

(a) $Kcc = Kp + \beta|v\_cc - v|$, where Kcc is the first gain, Kp is a first constant, β is a second constant, v_cc is the target speed, and v is the determined current speed, or

(b) $Kcc = \max(Kp, \beta|v\_cc - v|)$, where max is the maximum of Kp and $|v\_cc - v|$, Kcc is the first gain, Kp is a first constant, β is a second constant, v_cc is the target speed, and v is the determined current speed; and

using at least the speed control system desired acceleration to control one of: an angle of an engine throttle in the vehicle, an amount of electricity provided to an electric motor in the vehicle, or a fueling rate of a diesel engine in the vehicle.